

REMARKS

Claims 1, 3-5, 9-32 and 34-66 are pending in the above-captioned patent application after this amendment. Claims 13, 20-22, 27-32, 43, 44 and 47-60 are rejected. Claims 1, 3-5, 9-12, 14-19 and 34-42 are allowed. Claims 23-26, 45 and 46 are objected to as being dependent upon a rejected base claim.

The Applicant respectfully disagrees with the rejection of claims 13, 20-22, 27-32, 43, 44 and 47-60. However, the Applicant has amended claims 13, 20, 43, 50 and 56, and added new claims 61-66 with this amendment for the purpose of expediting the patent application process in a manner consistent with the goals of the Patent Office (65 Fed. Reg. 54603), and/or to clarify what the Applicant regards as the present invention.

Support for the amendments to claims 13, 20, 43 and 56 can be found throughout the originally filed specification. In particular, support for the amendments to claims 13, 20, 43 and 56 can be found in the specification at page 12, line 33 through page 13, line 5, at page 14, line 20 through page 15, line 17, at page 19, lines 16-29, at page 21, lines 3-13, and in Figures 3A, 3B, 3C and 3E.

Support for new claims 61-66 can be found throughout the originally filed specification. In particular, support for new claims 61-66 can be found in the specification at page 19, lines 16-29, at page 21, lines 3-13, in Figures 3C and 3E, and in the previously pending claims.

New claim 61 is based on previous claim 23 rewritten in independent form, with the exception of the limitation of the second fluid being a gas (from claim 21) not being included in new claim 61. Previous claim 23 was found to contain patentable subject matter. Accordingly, new claim 61 is believed to be in condition for allowance.

New claim 65 is based on previous claim 45 rewritten in independent form. Therefore, because new claim 65 contains only those limitations contained in previous claim 45, new claim 65 is not narrower in scope than previously filed claim 45. Previous claim 45 was found to contain patentable subject matter. Accordingly, new claim 65 is considered to be in condition for allowance.

No new matter is believed to have been added by this amendment. Reconsideration of the pending application is respectfully requested in view of the above-recited amendments and the arguments set forth below.

Allowable Subject Matter

Claims 1, 3-5, 9-12, 14-19 and 34-42 have been allowed. Claims 23-26, 45 and 46 have been objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

As stated above, new claim 61 is based on previous claim 23 rewritten in independent form, with the exception of the limitation of the second fluid being a gas not being included in new claim 61. Previous claim 23 was found to contain patentable subject matter, aside from the limitation of the second fluid being a gas. Accordingly, new claim 61 is considered to be patentable. Because new claims 62-64 depend directly from new claim 61, they are also considered to be patentable. Moreover, new claims 62-64 are based on previous claims 24-26, which were also found to contain patentable subject matter.

Further, as stated above, new claim 65 is based on previous claim 45 rewritten in independent form. Previous claim 45 was found to contain patentable subject matter. Accordingly, new claim 65 is considered to be patentable. Because new claim 66 depends directly from new claim 65, it is also considered to be patentable. Moreover, new claim 66 is based on previous claim 46, which was also found to contain patentable subject matter.

Rejections Under 35 U.S.C. §102(b)

Claims 20-22, 43, 44 and 47-49

Claims 20-22, 43, 44 and 47-49 are rejected under 35 U.S.C. §102(b), as being anticipated by U.S. Patent No. 4,126,798 issued to Carr, Jr. et al. ("Carr, Jr. et al."). The Applicant respectfully submits that the rejection of claims 20 and 43, as amended, is unsupported by the art and should be withdrawn.

More particularly, the Examiner contends that Carr, Jr. et al. teaches in Figures 2 and 5, a mover including a magnet component (30) and a conductor component (25), said mover including a first passageway (27, 70) and a sealed second passageway (26) in the conductor component of the mover, the second passageway being filled with a second fluid (air, Col. 5, lines 46-59) that is not actively circulated; wherein the passageways are

positioned within the conductor component (Col. 5, lines 2-14); and a fluid source that circulates a first fluid through the first passageway. The Examiner further contends that Carr, Jr. et al. teaches additional features as claimed in the present invention.

The Applicant provides that Carr, Jr. et al. is directed to in Figures 2-5, a generator 10 comprising a rotor assembly 20 and a stator assembly 30 which are enclosed in a housing 40. The rotor assembly 20 comprises a superconductive direct current field winding 25 which is wound about a nonferromagnetic core 26, whereas the stator assembly 30 supports a non-superconductive winding 35. Cooling of the stator assembly 30 is accomplished by passing oil on the outside of the conductor insulation through cooling ducts 33 located outside of the coil insulation. The rotor assembly 20 and a dewar vessel 27 provide a barrier for the permanently sealed vacuum environment surrounding the field winding, with the dewar vessel 27 being maintained at a temperature near absolute zero by a cryogenic fluid introduced into the interior of the dewar vessel 27 through a conduit 70 that extends through the housing endplate 42. Further, the dewar vessel 27 surrounds the radiation shield 23 and the superconductive winding 25 thereby providing a thermally non-conductive casing. The superconductive winding 25 is disposed between non-magnetic wedge members 18 upon a cylindrical rotor tube 26. Cooling to superconductive temperatures is provided by discrete ducts disposed within the field winding 25, with the cooling ducts directing the flow of a suitable cryogenic fluid through the active length of the winding 25. The superconductive field winding 25 consists of six coils 11-16, with each of the coils 11-16 consisting of a plurality of superconductive turns disposed between wedge members 18 about the rotor tube 26 which has an air core. (Carr, Jr. et al. column 3, line 67 through column 4, line 21, column 4, lines 38-49, column 4, line 59 through column 5, line 14, column 5, lines 27-38, column 5, lines 46-59, and in Figures 2-5).

However, the Applicant contends that Carr, Jr. et al. does not disclose a mover combination including a mover having a magnet component, a conductor component having a coil assembly, a first passageway, a sealed second passageway that encircles the conductor component, the second passageway being filled with a second fluid that is not actively circulated, wherein the first passageway encircles the coil assembly and the second passageway, and wherein the second passageway encircles the coil

assembly; and a fluid source that circulates a first fluid through the first passageway. In Carr, Jr. et al., the second passageway that is filled with a second fluid that is not actively circulated is embodied in the air core within the rotor tube 26. However, the air core of the rotor tube 26 is positioned within the rotor tube 26 and does not encircle the coil assembly as claimed in the present application.

Additionally, the Applicant respectfully submits that the Examiner has misinterpreted Carr, Jr. et al. with respect to claim 22. The Examiner contends that Carr, Jr. et al. teaches the conductor component with a heat transferer (27). The Applicant respectfully submits that, as noted above, the dewar vessel (27) surrounds the radiation shield (23) and the superconductive winding (25) thereby providing a thermally non-conductive casing. Accordingly, the Applicant respectfully submits that the dewar vessel functions basically as an insulator and not as a heat transferer.

In distinction to Carr, Jr. et al., amended claim 20 is directed to a "mover combination comprising: a mover including a magnet component, and a conductor component having a coil assembly, the mover also including a first passageway and a sealed second passageway, the second passageway being filled with a second fluid that is not actively circulated; wherein the passageways are positioned within the conductor component, wherein the first passageway encircles the coil assembly and the second passageway, and wherein the second passageway encircles the coil assembly; and a fluid source that circulates a first fluid through the first passageway."

Because Carr, Jr. et al. does not disclose all of the elements of amended claim 20, the §102(b) rejection of amended claim 20 is unsupported by the art and should be withdrawn. Because claims 21 and 22 depend either directly or indirectly upon amended claim 20, the rejection of claims 21 and 22 under 35 U.S.C. §102(b) is also unsupported by the art and should be withdrawn.

Further, in distinction to Carr, Jr. et al., amended claim 43 of the present application recites "(a) method for controlling the temperature of a mover ... comprising the steps of: providing a first passageway in the conductor component of the mover, the first passageway encircling the coil assembly; providing a sealed second passageway in the conductor component of the mover between the first passageway and the coil assembly, the second passageway being filled with a second fluid that is not actively

circulated; and circulating a first fluid from a fluid source through the first passageway."

Because Carr, Jr. et al. does not disclose all of the elements of amended claim 43, the §102(b) rejection of amended claim 43 is unsupported by the art and should be withdrawn. Because claims 44 and 47-49 depend either directly or indirectly upon amended claim 43, the rejection of claims 44 and 47-49 under 35 U.S.C. §102(b) is also unsupported by the art and should be withdrawn.

Claims 56-60

Claims 56-60 are rejected under 35 U.S.C. §102(b), as being anticipated by U.S. Patent No. 6,313,556 issued to Dombrovski et al. ("Dombrovski et al."). The Applicant respectfully submits that the rejection of claim 56, as amended, is unsupported by the art and should be withdrawn.

More particularly, the Examiner contends that Dombrovski et al. teaches in Figure 1, a mover including an outer surface, a magnet component (52) and a conductor component (72), wherein the conductor component has a first passageway (76, 78) and a second passageway (44) that is at least partially encircled by the first passageway; and a circulation system (16, 20) comprising a fluid source that directs a first fluid to the first passageway and a second fluid to the second passageway, wherein the fluid source controls the temperature and flow of the second fluid so that the second fluid is approximately boiling at the inlet (the cryogenic fluid used in this system would inherently be boiling at least during the initial operation of the device). The Examiner further contends that Dombrovski et al. teaches additional features as claimed in the present invention.

The Applicant provides that Dombrovski et al. is directed to a superconducting electromechanical rotating (SER) device 10 including: a rotor 14; a cryogenic refrigeration system 16 which cools the windings of the rotor 14; a stator 18 that coaxially surrounds the rotor 14 and drives the rotor 14 to rotate upon receiving an excitation current; a water cooler 20; and a power source 22. The rotor 14 includes a rotor winding 52, which is cooled by the cryogenic fluid so as to be rendered superconductive; a coil support structure 56; and a vacuum jacket 54, which thermally insulates them from the environment. The cryogenic refrigeration system 16 is linked to the interior of the rotor 14

via respective supply and return conduits 44 and 46. The refrigerant supplied by the cryogenic refrigeration system 16 may be any suitable cryogenic fluid such as gaseous helium, liquid nitrogen, liquid neon, or liquid oxygen, which is pumped through the coil support structure 56 via the supply and return conduits 44 and 46 to cool the rotor winding 52.

The stator 18 includes a stator winding 72 and a support structure 74, wherein the stator winding 72 is formed from a plurality of coils 100 that are potted to an inner radial surface of the support structure 74 and possibly to end caps 26, 28, so that the coils 100 are fixed in place relative to the support structure 74 and the end caps 26, 28. The stator 18 is cooled by circulating a liquid coolant such as water through the stator 18 in a closed loop via supply and return conduits 76 and 78 extending between the water cooler 20 and the stator 18. The water cooler 20 may comprise an assembly which is capable of drawing heated water away from the stator 18 via the return conduit 78, cooling the heated water to a temperature, for example, near, at or below ambient temperature, and returning the cooled water to the stator 18 via the supply conduit 76. (Dombrovski et al. Abstract, column 1, lines 24-40, column 2, lines 37-53, column 4, line 17 through column 5, line 49, column 6, lines 34-42, column 7, lines 16-35, and column 8, line 66 through column 9, line 7, and in Figure 1).

However, the Applicant contends that Dombrovski et al. does not disclose a mover combination including a mover having a magnet component and a conductor component that is movable relative to the magnet component, wherein the conductor component has a first passageway and a second passageway that is at least partly encircled by the first passageway; and a circulation system having a fluid source that controls the temperature and flow of a second fluid so that the second fluid is approximately boiling at an inlet to the second passageway. Dombrovski et al. teaches the stator 18 driving the rotor 14 so that the rotor 14 rotates relative to the stator 18. As noted by the Examiner, the rotor 14, with rotor winding 52, makes up the magnet component, while the stator 18, with stator winding 72, makes up the conductor component. Accordingly, Dombrovski et al. teaches the magnet component (the rotor 14) being movable relative to the conductor component (the stator 18), whereas claim 56 of the present application requires that the conductor component be movable relative to the magnet component.

Further, the SER device 10 in Dombrovski et al. includes a first passageway (supply and return conduits 76 and 78) that at least partly encircles a portion of a second passageway (supply and return conduits 44 and 46). However, the Applicant respectfully contends that in Dombrovski et al., the first passageway (76, 78) is positioned within the stator 18, whereas the second passageway (44, 46) is positioned within the rotor 14. Accordingly, Dombrovski et al. does not disclose the conductor component having a first passageway and a second passageway, wherein the second passageway is at least partly encircled by the first passageway.

Moreover, Dombrovski et al. does not disclose a circulation system which controls the second fluid to be approximately boiling at the inlet. While the Applicant concedes that Dombrovski et al. teaches the use of a cryogenic fluid for cooling the windings of the rotor 14, this does not necessarily lead to or support the position of the Patent Office that the cryogenic fluid would inherently be boiling (at an inlet to the second passageway) at least during the initial operation of the device.

In distinction to Dombrovski et al., amended claim 56 is directed to a "mover combination comprising: a mover including an outer surface, a magnet component and a conductor component that is movable relative to the magnet component, wherein the conductor component has a first passageway and a second passageway that is at least partly encircled by the first passageway; and a circulation system comprising a fluid source that directs a first fluid to the first passageway and a second fluid to the second passageway through an inlet to the second passageway, wherein the fluid source controls the temperature and flow of the second fluid so that the second fluid is approximately boiling at the inlet."

Because Dombrovski et al. does not disclose all of the elements of amended claim 56, the §102(b) rejection of amended claim 56 is unsupported by the art and should be withdrawn. Because claims 57-60 depend directly upon amended claim 56, the rejection of claims 57-60 under 35 U.S.C. §102(b) is also unsupported by the art and should be withdrawn.

Rejections Under 35 U.S.C. §103(a)

Claims 28-32 and 51-55

Claims 28-32 and 51-55 are rejected under 35 U.S.C. §103(a) as being unpatentable over Carr, Jr., et al..

As noted above, the rejection of amended claim 20 is unsupported by the art. Therefore, amended claim 20 negates a prima facie showing of obviousness with respect to the cited reference. Accordingly, claims 28-32, which directly or indirectly depend from amended claim 20, are patentably distinguishable over the cited reference.

Additionally, as noted above, the rejection of amended claim 43 is unsupported by the art. Therefore, amended claim 43 negates a prima facie showing of obviousness with respect to the cited reference. Accordingly, claims 51-55, which directly or indirectly depend from amended claim 43, are patentably distinguishable over the cited reference.

Claim 13

Claims 15-19, 39-42 and 51-55 are rejected under 35 U.S.C. §103(a) as being unpatentable over Dombrovski et al. in view of U.S. Patent No. 4,764,696 issued to Fukaya et al. ("Fukaya et al.").

In response, the Applicant has amended claim 13 so that it depends from claim 1, which, as noted above, has been allowed. Accordingly, the Applicant respectfully submits that claim 13 is in condition for allowance.

Claims 27 and 50

Claims 27 and 50 are rejected under 35 U.S.C. §103(a) as being unpatentable over Carr, Jr., et al. in view of Dombrovski et al..

As noted above, the rejection of amended claim 20 is unsupported by the art. Therefore, amended claim 20 negates a prima facie showing of obviousness with respect to the cited references. Accordingly, claim 27, which directly depends from amended claim 20, is patentably distinguishable over the cited references.

Additionally, as noted above, the rejection of amended claim 43 is unsupported by the art. Therefore, amended claim 43 negates a prima facie showing of obviousness with respect to the cited references. Accordingly, claim 50, which indirectly depends from

amended claim 43, is patentably distinguishable over the cited references.

Conclusion

In conclusion, the Applicant respectfully asserts that claims 1, 3-5, 9-32 and 34-66 are patentable for the reasons set forth above, and that the application is now in a condition for allowance. Accordingly, an early notice of allowance is respectfully requested. The Examiner is requested to call the undersigned at 858-456-1951 for any reason that would advance the instant application to issue.

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Respectfully submitted,



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